

CLAIMS

What is claimed is:

- 1 1. A metering device comprising:
2 a metering element, operationally attached for engaging a compressible material
3 line, thereby causing a selectable peristaltic effect upon a material in said compressible
4 material line.

- 1 2. The metering device of claim 1, further comprising a control system operatively
2 attached to said metering element, where said control system allows for control of the
3 selectable peristaltic effect and said metering element.

- 1 3. The metering device of claim 1, further comprising a base, said base adapted so
2 that the compressible material line is positioned between said base and said metering
3 element.

- 1 4. The metering device of claim 3, wherein said base comprises a depression for
2 engagement with said compressible material line.

- 1 5. The metering device of claim 1, wherein said metering element is rotatable.

- 1 6. The metering device of claim 1, wherein said metering element is slidable.

1 7. The metering device of claim 1, wherein said metering element has an arcuate
2 portion.

1 8. The metering device of claim 7, wherein said metering element is a cylinder.

1 9. The metering device of claim 8, wherein said metering element is a cylinder of a
2 plurality of diameters.

1 10. The metering device of claim 1, further comprising the compressible material line.

1 11. The metering device of claim 10, further comprising a material reservoir
2 communicating with said compressible material line.

1 12. The metering device of claim 10, further comprising a material dispensing end
2 communicating with said compressible material line.

1 13. The metering device of claim 12, wherein said material dispensing end is a
2 dispensing needle.

1 14. The metering device of claim 12, further comprising a robotic positioning system
2 operatively attached to said material dispensing end.

1 15. The metering device of claim 1, wherein said peristaltic effect causes a dispensing
2 of a unit of material from said metering device.

1 16. The metering device of claim 15, wherein the quantity of said unit of dispensed
2 material is within 2% of a desired quantity of material to be dispensed.

1 17. A precision metering system comprising:
2 a material delivery unit including:
3 a material reservoir, a material dispensing end, and a compressible
4 material line connecting said material reservoir and said material
5 dispensing end;
6 a base;
7 a metering element, adapted to engage said compressible material line between
8 said metering element and said base, thereby creating a peristaltic effect upon a material
9 in said compressible material line, said peristaltic effect thereby causing a precision
10 dispensing of a unit of material from said material dispensing end, wherein said unit of
11 material is selectable.

1 18. The precision metering system of claim 17, further comprising a control system
2 operatively attached to said metering element, wherein said control system allows for
3 control of said metering element.

1 19. The precision metering system of claim 17, further comprising a robotic
2 positioning system operatively attached to said material dispensing end.

1 20. The precision metering system of claim 17, wherein said metering element is a
2 cylinder.

1 21. The precision metering system of claim 17, wherein said metering element is
2 rotatable.

1 22. The precision metering system of claim 17, wherein said metering element is
2 slidable.

1 23. A metering device comprising:
2 a metering element that is one of slidable and rotatable, operationally attached for
3 engaging a compressible material line, and upon said sliding or rotation causes a
4 peristaltic effect upon a material located within said compressible material line further
5 causing a precision dispensing of a unit of material from said device.

1 24. The metering device of claim 23, further comprising a control system operatively
2 attached to said metering element, wherein said control system allows for user
3 programmability of said metering element.

1 25. The metering device of claim 23, further comprising a base, wherein said
2 compressible material line is positioned between said metering element and said base.

1 26. The metering device of claim 23, wherein said metering element is selectable.

1 27. A metering system comprising:
2 a metering device including:
3 base;
4 a metering element, adapted for engaging a compressible material line
5 positioned between said metering element and said base, thereby causing a peristaltic
6 effect upon a material in said compressible material line;
7 a control system operatively attached to said metering element, wherein said
8 control system allows for control of said metering element; and
9 a robotic positioning system operatively attached to said metering device.

1 28. The metering system of claim 27, wherein said metering element is
2 a rotatable cylinder.

1 29. The metering system of claim 27, wherein said robotic positioning
2 system includes a gantry frame.

1 30. The metering system of claim 27, further comprising:
2 a material reservoir;
3 a material dispensing end; and
4 the compressible material line operatively attached therebetween.

1 31. A method of precision dispensing of material comprising:
2 providing a device which includes a base; and
3 a metering element;
4 positioning a compressible material line between said metering element and said
5 base;
6 moving one of said base, metering element, compressible material line, or a
7 combination thereof, thereby causing a peristaltic effect upon a material within said
8 compressible material line; and
9 dispensing a precise unit of material from said device.

1 32. The method of claim 31, wherein said metering element is a rotatable cylinder.

1 33. The method of claim 31, wherein said precise unit of material dispensed is within
2 2% of a quantity desired to be dispensed.